

**IN THE DRAWINGS**

Please replace page 1 of the drawings as originally filed with the attached replacement page. Applicants respectfully submit that the present replacement page does not add any new matter to the application.

### **REMARKS**

The Applicants are filing this Amendment and Response in response to an Official Action dated December 29, 2006. At the time of the Official Action, claims 1-23 were pending. In this Response and Amendment, no claims are canceled or added. Accordingly, claims 1-23 remain currently pending. Claims 2, 9, 11, 16, 20 and 21 are amended.

### **Summary of Rejections and Objections**

In the Office Action, the drawings were objected to as failing to comply with 37 C.F.R. § 1.84(p)(5) because they did not include reference signs mentioned in the specification and because the drawings included reference characters not mentioned in the specification. Claims 2 and 9 were objected to because of informalities. Claims 2, 15, 16 and 20 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regards as the invention. Claims 11 and 21 were rejected under 35 U.S.C. § 101 as lacking patentability utility. Claims 1-23 were rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,920,446 to Wang (“the Wang reference”), in view of U.S. Patent No. 6,684,219 to Shaw (“the Shaw reference”). Each of these rejections and objections is addressed in detail below.

### **Objections to the Drawings**

With respect to the Examiner’s objections to the drawings, the Examiner stated that the drawings fail to comply with 37 C.F.R. § 1.84(p)(5) because the drawings “do not include the following reference sign(s) mentioned in the specification: item 40 and item 146.” The Examiner further stated that the drawings “include the following reference character(s) not

mentioned in the specification: Fig. 3, item 134. Office Action, pages 2-3. Accordingly, Applicants have amended the drawings to include reference character 40, and amended the specification so that incorrectly referenced character 146 is replaced with reference character 156, as clearly shown in the figures. Further, the Applicants have added a reference to the specification pertaining to reference character 134. Accordingly, Applicants request the Examiner to enter these amendments and withdraw the objections to the drawings.

### **Claim Objections**

Applicants have amended claims 2 and 9 to correct minor informal errors as indicated by the Examiner. Accordingly, withdrawal of the objections is respectfully requested.

### **Claim Rejections under 35 U.S.C. § 112, Second Paragraph**

With respect the Examiner's rejection to claims 2, 15, 16 and 20 under Section 112, second paragraph, the Examiner stated that:

[r]egarding claims 2 and 15, the term "if" is a relative term, which renders the claims indefinite. The term "if" is considered alternative language, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Due to the language of the above stated claims, examiner is unsure of what the outcome would be if the statement were not applied. Therefore, the above stated claims will be examined without giving weight to the term "if". Further corrections needed.

Claims 16 and 20 recite the limitation "the recited order" if the second line of the claim, examiner is unsure as to what "order" applicant is referring to, since there is no prior mention of such information. Therefore, there is insufficient antecedent basis for this limitation in the claim.

Office Action, p. 4.

The Applicants respectfully traverse this rejection.

***Legal Precedent***

Although the Examiner may take exception to the terms used in the claims, the patentee may be his own lexicographer. *Ellipse Corp. v. Ford Motor Co.*, 171 U.S.P.Q. 513 (7<sup>th</sup> Cir. 1971), *aff'd*, 613 F.2d 775 (7<sup>th</sup> Cir. 1979), *cert. denied*, 446 U.S. 939 (1980). The Examiner is also reminded not to equate breadth of a claim with indefiniteness. *In re Miller*, 441 F.2d 689, 169 U.S.P.Q. 597 (CCPA 1971).

In contrast to the Examiner's assertion, Applicants respectfully submit that the word "if" is unambiguous and clearly renders the claims 2 and 15 definite. For example, dependent claim 2 recites "wherein the stop condition is satisfied if one of the plurality of data entries is not Z-value equivalent to one of the plurality of values being utilized to scan the plurality of data entries." Claim 15 recites similar subject matter. Accordingly, claims 2 and 15 can be construed to mean that an event will occur (e.g., a stop condition is effected) when a first value (e.g., a value obtained from data entries) is not equal to a second value (e.g., Z-value). Otherwise, the event will not occur. As clearly stated in the specification:

The scan range may be determined by: (i) exploiting the PMR attributes to set a specific scan range, and (ii) extending the nested-join relational operator 100 by adding a stop-condition, which is evaluated for each Z-value scan in the index table 90. This stops the range operation as soon as a non Z-value equivalent entry is scanned in the index table 90. As a result, the single scan operation may limit the scanning of the entries of the index table 90 to Z-value equivalents, which improves the efficiency of the nested-join relational operator 100.

Application, paragraph 35.

Thus, the specification clearly defines the claimed process recited in claims 2 and 15 such that one of ordinary skill in the art would be reasonably apprised of the scope of the invention. Further, Applicants' use of the word "if" in the claims simply recites a cause and effect process and, therefore, the use of the word "if" is logically appropriate, particularly as applied to the claimed features discussed in the specification.

Applicants further note that in rejecting the claims based on Applicants' use of the word "if", the Examiner did not cite or rely on any authority stating or suggesting that the use of the word "if" in a claim renders the claim indefinite. This is in keeping with Applicants' assertion that there is no supporting legal authority for the Examiner's position. For at least these reasons, the Applicants respectfully request withdrawal of the rejection of claims 2 and 15 under Section 112, second paragraph.

With regard to the rejection of claims 16 and 20, Applicants do not concede to the correctness of the rejection under Section 112. However, to advance prosecution Applicants have nonetheless amended claims 16 and 20 to overcome the rejection by clearly setting forth that the acts referred to are performed in "an order in which they are recited." Accordingly, Applicants request withdrawal of the rejection of claims 16 and 20 under Section 112..

#### **Rejections Under 35 U.S.C. § 101**

With respect to the Examiner rejection of claims 11 and 21 under Section 101 as being directed to non-statutory subject matter, the Examiner stated that:

[a]n invention that is "inoperative" (i.e., it does not operate to produce the results claimed by the patent application)

is not a “useful” invention in the meaning of the patent law. *See, e.g., Newman v. Quigg*, 877 F.2d 1575, 1581, 11 USPQ2d 1340, 1345 (Fed. Cir. 1989), *In re Hardwood*, 390 F.2d 985, 989, 157 USPQ 673, 676 (CCPA 1968) (“An inoperative invention, of course, does not satisfy the requirement of 35 U.S.C. 101 that an invention be useful.”).

In the present case, claims 11 and 21, all the system and program to transform a query, create a scan range, and scan data entries. However, the system and program fail to produce a result or a conclusion about the scanned data entries. Therefore, making the system and program simply a manipulation of an abstract idea.

To expedite a complete examination of the instant application, the claims rejected under 35 U.S.C. § 101 (lack of utility) above are further rejected as set forth below in anticipation of applicant amending these claims to place them within the four statutory categories of invention with utility.

Office Action, page 5.

First, Applicants note that independent claim 11 recites means-plus-function language and, as such, should be given the broadest reasonable interpretation consistent with all corresponding structures or materials described in the specification and their equivalents including the manner in which the claimed functions are performed. *See Kemco Sales, Inc. v. Control Papers Company, Inc.*, 208 F.3d 1352, 54 U.S.P.Q.2d 1308 (Fed. Cir. 2000). Further guidance in interpreting the scope of equivalents is provided in M.P.E.P. § 2181 through § 2186. *See*, M.P.E.P. 2106 (2)C. Moreover, while the Applicants do not concede the correctness of the rejection of claim 11 under Section 101, claim 11 has been amended to recite “means for returning a result based upon the plurality of data entries that are within the scan range of each of the plurality of values.” Because claim 11 now directly recites a tangible, concrete result, the Applicants respectfully request withdrawal of the rejection of claim 11 under Section 101.

Second, with regard to independent claim 21, Applicants respectfully submit that according to the Supreme Court, congress intended statutory subject matter to “include anything under the sun that is made by man.” *Diamond v. Chakrabarty*, 447 U.S. 303, 308-09; 206 U.S.P.Q. 193, 197 (1980). Indeed, exclusions of statutory subject matter are limited to laws of nature, natural phenomena and abstract ideas. *See Diamond v. Diehr*, 450 U.S. 175, 185; 209 U.S.P.Q. 1, 7 (1981). Other than these specific exceptions, therefore, nearly anything man made is statutorily patentable subject matter under 35 U.S.C. §101.

Hence, computer programs (e.g., claim 21), if they are in a tangible medium, they are considered patentable subject matter under Section 101. *See In re Beauregard*, 53 F.3d 1583 (Fed Cir. 1995). Indeed, the *Beauregard* case directly states that, “computer programs embodied in a tangible medium...are patentable subject matter under 35 U.S.C. §101.” *Id.* Accordingly, because independent claims 21 recites, *inter alia*, “A computer readable medium that stores machine-readable instructions,” Applicants assert that claims 21 is directed to patentable subject matter under 35 U.S.C. §101. Accordingly, Applicants respectfully request withdrawal of the rejection of claim 21 under Section 101.

### **The Rejection Under 35 U.S.C. § 103**

With respect to the rejection of independent claims 1-23 under 35 U.S.C. § 103 as being obvious over the Wang reference in view of the Shaw reference , the rejection of independent claims 1, 11, 12 and 21 is exemplary:

Regarding 'Claims 1, 11-13, 16, and 21 -22, Wang discloses a system for performing query operations, the system comprising:

a base table having a plurality of spatial objects (column 4, lines 37-43 Wang). However, Wang is silent with respect to an index table that comprises a plurality of data entries, the plurality of data entries being associated with the plurality of spatial objects. On the other hand, Shaw discloses an index table that comprises a plurality of data entries, the plurality of data entries being associated with the plurality of spatial objects (column 10, lines 16-43 Shaw). Wang and Shaw are analogous art because they are from the same field of endeavor of providing a representation of spatial objects. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate Shaw's teachings into the Wang system. A skilled artisan would have been motivated to combine as suggested by Shaw at column 5, lines 33-48, in order to permit easy and complete updating of data, more complex queries, and direct exporting of data into the relational tables. Therefore, the combination of Wang in view of Shaw, disclose a module adapted to perform a query operation on the index table (column 14, lines 8-24, Shaw), the module configured to; convert a query window into a plurality of values (column 14, lines 24-56, Shaw); create a scan range for each of the plurality of values with a begin range value and an end range value from the plurality of values (column 7, lines 50-64, Wang), wherein the scan range includes a stop condition (column 4, lines 22-30, Wang); scan the plurality of data entries for each of the scan ranges to identify one of the end range value and the stop condition (column 8, lines 30-45, Wang); and return a result based upon the plurality of data entries that are within the scan range for each of the plurality of values (column 8, Table 5, Wang).

Office Action, pp. 6, 7.

The Applicants respectfully traverse the rejection. The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting



the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985). When prior art references require a selected combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988).

*Independent Claims 1, 11, 12 and 21*

The rejection of independent claims 1, 11, 12 and 21 is improper because the Wang reference, the Shaw reference and/or their combination clearly does not disclose or suggest all elements of the claimed subject matter. For example independent claim 1 recites a system for performing query operations having a module configured to “convert a query window into a *plurality of values*,” and “create a *scan range* for each of the plurality of values with a *begin range* value and an *end range* value from the plurality of values, wherein the scan range includes a *stop condition*.” (Emphasis added.) The module recited in dependent claim 1 is further adapted to “scan the plurality of data entries for each of the scan ranges to identify one of the end range value and the stop condition.” (Emphasis added.) Similarly, independent claim 11 recites a system having “means for creating a *scan range* with a *begin range* value,

an *end range* value, and a *stop condition* for each of the plurality of values,” and “means for scanning a plurality of data entries until one of the end range value and the *stop condition*.” (Emphasis added.) Independent claims 12 and 21 are directed towards a method and a computer-readable medium, respectively, reciting subject matter similar to that quoted above in independent claims 1 and 11.

In contrast, the Wang reference, the Shaw reference and/or their combination does not disclose a module configure to perform the above recited query operations. In rejecting the above-claimed subject matter the Examiner relied on a portion of the Shaw reference relating to a query process whereby a

system responds at step 92 by accessing the object-oriented databases, searching for a match between the database of spatial objects and the requested area of interest. This process is shortened by accessing the VPF metadata for the VPF library objects within the database. At step 93, the system lists to the user all databases whose geographic coverage includes at least part of the area of interest, regardless of whether the databases are VPF, RPF, or TPS. The user selects the database of choice at step 94. The system responds at steps 95 and 96 by listing all libraries within the database whose objects at least intersect the geographic area of interest. At step 97, the user selects a library of choice, in response to which the system lists to the user at step 98 all coverages and features covered by the selected library. Exemplary coverages include population, obstruction, hydrography, earth cover, transportation, and navigation. The user then selects at step 99 a coverage or feature(s) desired. To access the entire library, for example, the user would select all listed features. At step 101 the system accesses the spatial data manager to search for all library objects within the geographical area of interest with the desired coverage or feature(s). For VPF databases, a spatial data manager exists for each coverage and each feature type. For RPF databases, a spatial data manager exists for each coverage only.

Shaw, col 14, lines 24-65.

Accordingly, the Examiner interpreted the above portion of Shaw as corresponding to the claimed module configured to convert a query window into a plurality of values. Office Action, page 6. However, the above portion cited by the Examiner teaches the manner by which a user interactively selects data bases and libraries used for performing searches within a geographical area of interest. Moreover, the disclosure clearly fails to disclose or suggest a module configured to convert a query window into a plurality of values, as recited by independent claim 1, and as similarly recited by independent claims 11, 12 and 21.

Further, in rejecting the claimed creating a scan range for each of the plurality of values, the Examiner relied on a portion of the Wang reference in which:

a given spatial object (e.g., a map representing a region of the world), the spatial object is decomposed into z-regions. Thus, as shown in FIG. 2, the space at z-level 0 is divided into two halves along an axis (referred to as a hyperplane). Top-down z-ordering decomposition works as follows: Starting with the complete data space, z-regions are computed by splitting the respective data space along hyperplanes (e.g., one of a vertical axis and horizontal axis). The z-regions are iteratively split until a termination criterion is met. After every split, a z-region in which a spatial object is found is further analyzed.

Wang, col. 4, lines 22-30.

However, in contrast to the Examiner's interpretation, the Wang reference merely discloses a Z-value ordering scheme and resulting granularization of the Z-values. There is no disclosure or suggestion in the Wang reference, the Shaw reference or their combination of a module configured to create a scan range for each of the plurality of values, much less one that creates a begin range value and an end range value from the plurality of values, wherein the scan range includes a stop condition, as recited by independent claim 1, 11, 12 and 21.

Accordingly, the combination of Wang and Shaw cannot render the Applicants' claims obvious. Therefore, the Applicants respectfully assert that the rejections of independent claims 1, 11, 12 and 21 under Section 103 are erroneous and should be withdrawn. Accordingly, Applicants request the Examiner to allow independent claims 1, 11, 12 and 21, as well as those claims depending thereon.

Independent Claims 6 and 17

In rejecting independent claims 6 and 17 the Examiner stated:

Regarding Claims 6, 17, and 20, the combination of Wang in view of Shaw, disclose a system for performing query operations, the system comprising:

a base table having a plurality of spatial objects (column 4, lines 37-43, Wang); an index table that comprises a plurality of data entries, the plurality of data entries being associated with the plurality of spatial objects in the base table (column 10, lines 16-43, Shaw); a module adapted to perform a query operation on the index table (column 14, lines 8-24, Shaw), the module configured to; convert a query window into a plurality of values (column 14, lines 24-56, Shaw); perform a first scan for one of the plurality of values on the plurality of data entries (column 5, lines 27-41, Wang); return a result from the first scan of the plurality of data entries, (column 5, lines 54-57 and Table 1, Wang); determine whether a second of the plurality of values may return the result with a second scan (column 6, lines 30-36, Wang); skip the second scan if the second scan is determined to return the result (column 7, lines 58-64, Wang); and perform the second scan if the second scan is determined not to return the result (column 6, lines 15-24, Wang).

Office Action, pp. 8-9.

The rejection of independent claims 6 and 17 under Section 103 is improper because the Wang reference, the Shaw reference and/or their combination clearly does not disclose or suggest each element of the claimed subject matter. First, independent claims 6 and 17 are

allowable because they recite subject matter that is in part similar to the subject of independent claims 1, 11, 12 and 21, shown to be missing from the cited references. Second, claims 6 and 17 are allowable because they recite additional subject matter that is not disclosed or suggested by Wang and/or Shaw. For example, independent claim 6 recites a system having a module adapted to “perform a first scan for one of the plurality of values on the plurality of data entries; return a result from the first scan of the plurality of data entries; determine whether a second of the plurality of values may return the result with a second scan; skip the second scan if the second scan is determined to return the result; and perform the second scan if the second scan is determined not to return the result. Independent claim 17 recites similar subject matter.

In rejecting the claims, the Examiner combined various portions of the Wang and Shaw references to obviate the claimed subject matter. For example, in rejecting the claimed skipping the second scan if the second scan is determined to return the result, the Examiner relied on a portion of the Wang reference describing

In Table 4, the merged level-6 z-regions are in a block at z-level 4 that starts at [2,2] and ends at [3,3]. The z-code associated with this block is 0011. The remaining z-regions are still at level 6 since they have not been merged at 116. The merge at 116 is repeated until there are no further neighboring z-regions (at any z-level) with z codes that differ only by the least significant bit.

Wang, col. 7, lines 58-64.

The above disclosure of Wang pertains to merging of Z regions and clearly lacks any teaching or suggestion relating to the claimed subject matter of skipping a second scan. As such, the

Wang reference alone or in combination with Shaw does not disclose or suggest skipping the second scan if the second scan is determined to return the result.

Further, the Shaw reference does not cure the deficiencies of the Wang reference because it, too, does not disclose a module configured to perform a first scan for one of the plurality of values on the plurality of data entries; return a result from the first scan of the plurality of data entries; determine whether a second of the plurality of values may return the result with a second scan; skip the second scan if the second scan is determined to return the result; and perform the second scan if the second scan is determined not to return the result, as recited by independent claim 6, and as similarly recited by independent claim 17. Indeed, the Shaw reference is not even alleged to disclose this subject matter by the Examiner.

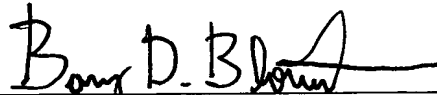
Because Wang or Shaw, either alone or together in hypothetical combination, do not contain each element of independent claims 6 or 17, the combination of Wang and Shaw cannot render those claims obvious. The Applicants therefore respectfully assert that the rejections of independent claims 6 and 17 under Section 103 are erroneous and should be withdrawn. Applicants further request the Examiner to allow independent claims 6 and 17, as well as those claims depending thereon.

**Conclusion**

In view of the remarks set forth above, the Applicants respectfully request reconsideration of the Examiner's rejections and allowance of all pending claims 1-23. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

Date: March 22, 2007



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